Theta Pro2Serve Management Company, LLC

Environmental Management & Enrichment Facilities

Preliminary Waste Management Plan for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio

Managed by
Theta Pro2Serve Management Company, LLC
for the Portsmouth/Paducah Project Office
of the United States Department of Energy

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Waste Management Plan
for the
Portsmouth Gaseous Diffusion Plant,
Piketon, Ohio

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U.S. Department of Energy
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THETA PRO2SERVE MANAGEMENT COMPANY, LLC
managing the
Infrastructure Activities at the
Portsmouth Gaseous Diffusion Plant
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CONTENTS

ACRONYMS

ACM	Asbestos-Containing Material
ARARs	applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSB	Cold Standby
CSI	Criticality Safety Indices
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
ILF	Industrial Landfill
LLW	Low-Level Radioactive Waste
NRC	Nuclear Regulatory Commission
OSWDF	On-Site Waste Disposal Facility
PORTS	Portsmouth Gaseous Diffusion Plant
RCRA	Resource Conservation and Recovery Act
SOF	Sum-of-Fractions
TSCA	Toxic Substances Control Act
USEC	United States Enrichment Corporation
WAC	Waste Acceptance Criteria
WCP	Waste Certification Plan
WHP	Waste Handling Plan

EXECUTIVE SUMMARY

The purpose of this plan is to provide the U.S. Department of Energy (DOE) with information to make informed decisions on the waste disposition options for managing wastes resulting from decontamination and decommissioning (D&D) at the Portsmouth Gaseous Diffusion Plant (PORTS), Piketon, Ohio.

The United States Enrichment Corporation (USEC) has leased many PORTS uranium enrichment facilities from DOE. DOE retained responsibility for all non-leased facilities and properties when in June 2000, USEC decided to cease uranium enrichment operations at PORTS by June 2001. On March 1, 2001, the Secretary of Energy announced that DOE would place PORTS in cold standby (CSB) and winterize the enrichment process facilities. This was done for a possible restart in the event of a significant disruption in the nation's supply of enriched uranium. DOE has now determined that the PORTS facilities will not be restarted and have changed the status from CSB to cold shutdown, with D&D to possibly start within the next two years.

To estimate the overall waste volume, estimates were used from *Waste Volume/Characteristics Inventory for the Evaluation of a Potential On-Site Waste Disposal Facility at the Portsmouth Gaseous Diffusion Plant (BJC 2003)* and *Preliminary Assessment for a Potential On-Site Waste Disposal Facility at the Portsmouth Gaseous Diffusion Plant (BJC 2002).* Only solid wastes are candidates for the on-site disposal facility. Liquid waste, transuranic waste, Resource Conservation and Recovery Act (RCRA) wastes exceeding land disposal restrictions, waste generated by USEC, and DOE wastes generated offsite are not considered to be acceptable waste streams for the disposal facility. Also, it is assumed that freon, fuels and acids from above and underground storage tanks, cylinders (i.e., acetylene, oxygen, ClF_3, etc.), waste from satellite accumulation, 90-day RCRA permitted storage, and low-level waste areas, are dispositioned before D&D begins.

The waste in this report was organized into one of the following five classifications:

- low-level radioactive waste (LLW),
- hazardous waste governed by RCRA,
- mixed hazardous waste (RCRA and LLW),
- mixed Toxic Substances Control Act (TSCA) and LLW, and
- sanitary waste (waste that are none of the above).

The wastes in this report were further organized into one of the following seven forms: (1) asbestos, (2) concrete, (3) demolition debris, (4) dry solids, (5) process equipment, (6) scrap metal, and (7) soil.

The D&D remediation activities at PORTS are expected to generate approximately 2.5 million yd^3 of waste. These wastes will need to be managed in a responsible and cost effective manner at disposal facilities offsite and/or in a disposal facility constructed onsite at PORTS. A summary of waste information is provided in Table ES.1 of this plan. This table is a composite of the total potential waste volume organized by waste form and waste classification.

Table ES.1. Summary of waste information

Waste form	LLW	LLW/ RCRA	LLW/ TSCA	RCRA	Sanitary	Total solids (yd^3)	Total liquids (gal)	%
Asbestos	9053	--	--	--	8	9,061	--	0.43
Concrete	343,596	8287	553	--	11,472	363,908	--	17.39
Demolition debris	453,281	9356	11,081	--	71,063	544,781	--	26.03
Dry solids	17,173	4080	574	9	6389	28,225	--	1.35
Process equipment	319,061	--	--	--	--	319,061	--	15.24
Scrap metal	466,019	3177	21,611	8	62,213	553,028	--	26.42
Soil	247,008	22,022	1247	--	4713	274,990	--	13.14
Decon solution[1]	250,000	--	--	--	--	--	250,000	12.25
Other liquid[2]	130,000	--	--	--	--	--	130,000	6.37
Oils[3]	800,000	--	860,000	--	--	--	1,660,000	81.37
Total solid	1,855,191	46,922	35,066	17	155,858	2,093,054	2,040,000	--
Total liquid	1,180,000	0	860,000	0	0	--	--	--
Percent solids	88.64	2.24	1.68	0.00	7.45	--	--	--
Percent liquids	57.84	0.00	42.16	0.00	0.00	--	--	--

[1]While it is assumed that dry decontamination will be the main decontamination methodology, it is anticipated that there will be some decontamination solutions generated during D&D activities.

[2]Examples of these liquids include ethylene glycol, diesel fuel, acids, and CO_2 that may be dispositioned prior to D&D activities but are included as a precautionary measure.

[3]These are lube oils and oils from transformers/switchyards that may be dispositioned prior to D&D activities but are included as a precautionary measure.

1. INTRODUCTION

The Portsmouth Gaseous Diffusion Plant (PORTS) is located in south-central Ohio in rural Pike County, approximately 27 miles north of Portsmouth, Ohio. PORTS was constructed during the Cold War to enrich uranium for both government and private programs. Extensive facilities were constructed to support the gaseous diffusion process. The facilities include administration and support buildings, maintenance buildings, a steam plant, laboratories, electrical switchyards, water and wastewater treatment facilities, and cleaning and decontamination facilities. The mission of the plant was to increase the national production of enriched uranium and maintain the nation's superiority in the development and use of nuclear energy.

On May 11, 2001, the United States Enrichment Corporation (USEC) ceased uranium enrichment operations at PORTS and placed the gaseous diffusion plant in cold standby (CSB). Following CSB status, the U.S. Department of Energy (DOE) changed the status to cold shutdown with plans for decontamination and decommissioning (D&D) in the near future. The purpose of this plan is to provide volume and associated characteristics of waste that may be generated and disposed of in an on-site waste disposal facility (OSWDF) and offsite for wastes that do not meet the requirement of the OSWDF.

The PORTS D&D Program includes: facility dismantlement, removal, and waste disposition. Dismantlement includes surface decontamination, when and where necessary to meet the criteria for disposal, and the removal of equipment, systems, fixtures, asbestos containing materials (ACM), facility walls, roofing, structural materials, above-grade masonry, above-grade or at-grade components, buildings, utility poles, pipe racks, and fencing. Dismantlement also includes the removal of slab-on-grade concrete, foundations, utilities, pilings, and drain lines up to 12 ft depending on the facility and level of contamination found. All materials or equipment resulting from dismantlement activities will require disposal as debris or waste. Soil incidental to dismantlement will also require disposal.

2. WASTE MANAGEMENT

The processes of hazardous materials abatement, process equipment removal, and building demolition will result in the generation of solid low-level radioactive waste (LLW), mixed waste, and hazardous waste, as well as, clean building debris. The waste will be processed, packaged, transported, and disposed in accordance with the applicable sections of the applicable or relevant and appropriate requirements (ARARs), disposal facilities' waste acceptance criteria (WAC), and applicable implementing plans and procedures. Processing of the radioactive wastes may include characterization, segregation, stabilization, encapsulation, and neutralization to meet the disposal facilities' WAC or as a best management practice. Training will be provided for waste management personnel to ensure conformance to regulatory requirements.

Approximately 2.1M yd^3 of solid and 2M gal of liquid wastes are expected to be generated as a result of this removal action. This volume estimate represents the disposal volume and includes anticipated swell factors and void ratios to account for packaging and transportation inefficiencies. This section describes the volumes and types of waste anticipated to be generated from the D&D activities and the proposed waste management strategies.

2.1 DESCRIPTION OF FORMS

The general waste forms expected to be generated from the D&D of the PORTS site are shown in Table 1 of this plan and are described in the following paragraphs.

Residual liquid material is primarily within equipment or reservoirs that will be drained, where possible, and containerized for proper disposal. Liquids containing polychlorinated biphenyls will be handled, as required, by Toxic Substance Control Act of 1976 (TSCA). Other fluids and sludge may be considered clean or Resource Conservation and Recovery Act of 1976 (RCRA)/mixed waste depending on the presence and concentrations of radioactive and/or hazardous constituents. This determination will be based on sampling/monitoring per the characterization plan covering that portion of the project work.

"Asbestos" waste includes any materials such as insulation that contains asbestos fibers. Typical asbestos waste materials include Transite, building pipe, floor tile, and cable insulation. It is likely that ACM will be prevalent in most demolition debris. The small amount of asbestos present in this report is friable material. ACM is not called out separately from demolition debris.

"Concrete" waste includes demolition materials and building materials. The main source of the waste is concrete pads, basements, and concrete building construction.

"Demolition debris" is general waste materials from razing buildings. This may include wood, rubber, concrete (that could not be separated from the rubble), siding, gypsum, roofing material, flooring, brick, etc.

"Dry solids" is the catch-all category for waste materials that do not fit a more precise category. These wastes include common trash, glass, and rubbish from facility cleanout prior to demolition, etc.

"Process equipment" waste is material and equipment that were directly used for uranium enrichment. The wastes include compressors, converters, process piping, valves, etc.

"Scrap metal" wastes are all metallic items that are other than construction debris and process equipment. These wastes include metal towers, non- process equipment, cranes, etc.

Finally "Soil" wastes include soils, sediments and soil-like materials such as carbon filters or sludge. These wastes include excavation soils and may include some process-related wastes that are dry sludge. The amount of soil to be excavated from below buildings during D&D activities is somewhat difficult to estimate. Non-aggressive soil removal during D&D activities was assumed to estimate soil volumes.

"Classified" waste consists of chemical compounds, metals, fabricated or processed items, machinery, electronic equipment, and other equipment, or any combination thereof containing classified information. Classified wastes require disposal at DOE-approved, secure sites.

Secondary waste streams will be produced in the process of cleanup of loose contamination and in the demolition itself. These waste streams may include rags, wipes, vacuum bags, personal protective equipment, and decontamination fluids. By nature of its generation, this waste stream is expected to be LLW. In an effort not to generate RCRA/LLW, chlorinated solvents will not be used, only non-RCRA solvents such as citric based cleaners are to be used.

Table 1 of this plan also shows the approximate disposal volumes anticipated for the project. The table is sorted by matrix (liquid/solid), then waste classification (LLW/sanitary/other), and then waste form (asbestos/debris/other).

Table 1. Waste classification, form, and volumes (in-place volumes prior to remediation)

Waste classification	Waste form	Classified	Destination	Facility	Total volume solids (yd^3)	Total volume liquid (gal)
LLW	Decon Solution	N	Direct Access Facility Onsite	Onsite/Various	-	250,000
LLW	Other Aqueous Solutions	N	Direct Access Facility Onsite	Onsite/Various	-	130,000
LLW	Oils	N	Approved off-site facility	Various	-	800,000
LLW/TSCA	Oils	N	Approved off-site facility	TSCA Various	-	860,000
LLW	Asbestos/Transite	N	PORTS	OSWDF	9053	-
Sanitary	Asbestos/Transite	N	PORTS	OSWDF	8	-
LLW	Concrete	N	PORTS	OSWDF	343,596	-
LLW/ RCRA	Concrete	N	PORTS or approved off-site facility	OSWDF Various	8287	-
LLW/TSCA	Concrete	N	PORTS	OSWDF	553	-
Sanitary	Concrete	N	PORTS	OSWDF	11,472	-
LLW	Demolition Debris	N	PORTS	OSWDF	453,281	-
LLW/RCRA	Demolition Debris	N	PORTS or approved off-site facility	OSWDF Various	9356	-
LLW/TSCA	Demolition Debris	N	PORTS	OSWDF	11,081	-
Sanitary	Demolition Debris	N	PORTS	OSWDF	71,063	-
LLW	Dry Solids	N	PORTS	OSWDF	17,173	-

Table 1. Waste classification, form, and volumes (in-place volumes prior to remediation) (continued)

Waste classification	Waste form	Classified	Destination	Facility	Total volume solids (yd^3)	Total volume liquid (gal)
LLW/RCRA	Dry solids	N	PORTS or approved off-site facility	OSWDF various	4080	-
LLW/TSCA	Dry solids	N	PORTS	OSWDF	574	-
RCRA	Dry solids	N	PORTS or approved off-site facility	OSWDF various	9	-
Sanitary	Dry solids	N	PORTS	OSWDF	6389	-
LLW	Process equipment	Y/N	PORTS	OSWDF	319,061	-
LLW	Scrap metal	N	PORTS	OSWDF	466,019	-
LLW/RCRA	Scrap metal	N	OSWDF	OSWDF	3177	-
LLW/TSCA	Scrap metal	N	PORTS	various	21,611	-
RCRA	Scrap metal	N	PORTS or approved off-site facility	OSWDF various	8	-
Sanitary	Scrap metal	N	PORTS	OSWDF	62,213	-
LLW	Soil	N	PORTS	OSWDF	247,008	-
LLW/RCRA	Soil	N	PORTS or approved off-site facility	OSWDF various	22,022	-
LLW/TSCA	Soil	N	PORTS	OSWDF	1247	-
Sanitary	Soil	N	PORTS	OSWDF	4713	-
Totals					**2,093,054**	**2,040,000**

Quantities of large equipment components and piping are shown in Table 2 of this plan.

Table 2. Major equipment and piping quantities

Building components	Quantity	Unit
Converters	4120	Each
Compressors	4200	Each
Transformers	481	Each
Switchgear	500	Each
Panel boards	400	Each
Control boards or racks	400	Each
Process block valves	2800	Each

Note: The listed equipment and piping items contribute significantly to the overall waste stream volume.

2.2 GENERAL STRATEGIES FOR WASTE MANAGEMENT

The following general approaches will be used for waste management:

- Waste generated will be volume reduced to the extent that it is economically beneficial. Volume reduction will include, as appropriate, compaction and/or size reduction of architectural and structural materials, crushing of concrete debris, etc.

- Materials and wastes will be characterized per the project characterization plan(s) and managed to meet the WAC of the facility receiving them. Waste certification and planning for all wastes shall meet the applicable requirements of the ARARs prior to shipping off site.

- Concrete and other approved materials that meet the appropriate cleanliness criteria will be disposed of on the PORTS site in the OSWDF.

Initial waste assumptions for the project are as follows:

- Waste is to be characterized prior to generation.

- Contaminated waste meeting the OSWDF WAC will be disposed at the OSWDF.

- Contaminated waste (radioactive) exceeding the OSWDF WAC will be disposed at an appropriate off-site facility.

- Waste requiring treatment will be treated prior to disposal. For example, this may include oils or similar materials that are handled by a pre-approved commercial facility or physical treatment (crushing/cutting/filling void spaces, etc) for the OSWDF or macro-encapsulation within the OSWDF.

- Classified waste can only be sent to the OSWDF or an approved DOE facility.

- Waste meeting the off-site industrial landfill (ILF) WACs will be sent to the off-site ILFs.

2.2.1 Waste Minimization and Reduction Efforts

Based on the boundaries established by project specifications and DOE guidance in effect at the time, the project team will determine whether a waste stream can be economically decontaminated for reuse or disposal at a lower classification of waste as part of the waste minimization discussions in, or referenced in, the Waste Handling Plans (WHP). The WHPs will review volume reduction, segregation, or other methods that would be planned to conserve OSWDF disposal capacity as it pertains to the project.

Project workers will be encouraged and work packages developed, as much as possible, to minimize generation of wastes that must be disposed of and to maximize reuse of materials in accordance with DOE guidance in effect during the D&D activities.

Construction debris materials, such as concrete, masonry, and block, with incidental amounts of wood, wallboard, etc., and containing low levels of residual contamination, may be crushed and used as earthen fill material. Note that any materials or debris generated by the project and planned to be disposed of onsite at PORTS OSWDF will meet the requirements of the OSWDF WAC.

2.3 WASTE CHARACTERIZATION, SEGREGATION, AND DISPOSAL

The general activities required for waste characterization, segregation, and disposal are shown in Fig. 1 of this plan. The general process for defining the waste characterization requirements is as follows:

- DOE and the D&D contractor will have a scoping meeting to agree on the content of the WHP/waste certification plan (WCP), to review existing data, and to identify data gaps (data quality objective process);
- The D&D contractor will prepare a draft WHP/WCP, which will be reviewed by DOE;
- The D&D contractor then revises the draft and prepares the WHP/WCP;
- The document is transmitted to DOE who transmits it as required.

Existing data will be used, whenever possible, to define the waste types/lots; identify the proposed disposal facilities; and identify additional data needed to meet disposal facility WAC.

Following issuance of the WCP/WHP, the waste will be characterized and profiled for the proposed disposal facility. Samples collected will be representative of the waste stream and collected in accordance with U.S. Environmental Protection Agency-approved sampling protocols and, where applicable, Multi-Agency Radiological Survey and Site Investigation Manual guidelines. For the OSWDF, specific radiological and chemical analysis will be performed using approved analytical laboratories in accordance with the final approved risk/toxicity based WAC. For other disposal facilities, specific radiological and chemical analysis will be performed in accordance with each facility's requirements.

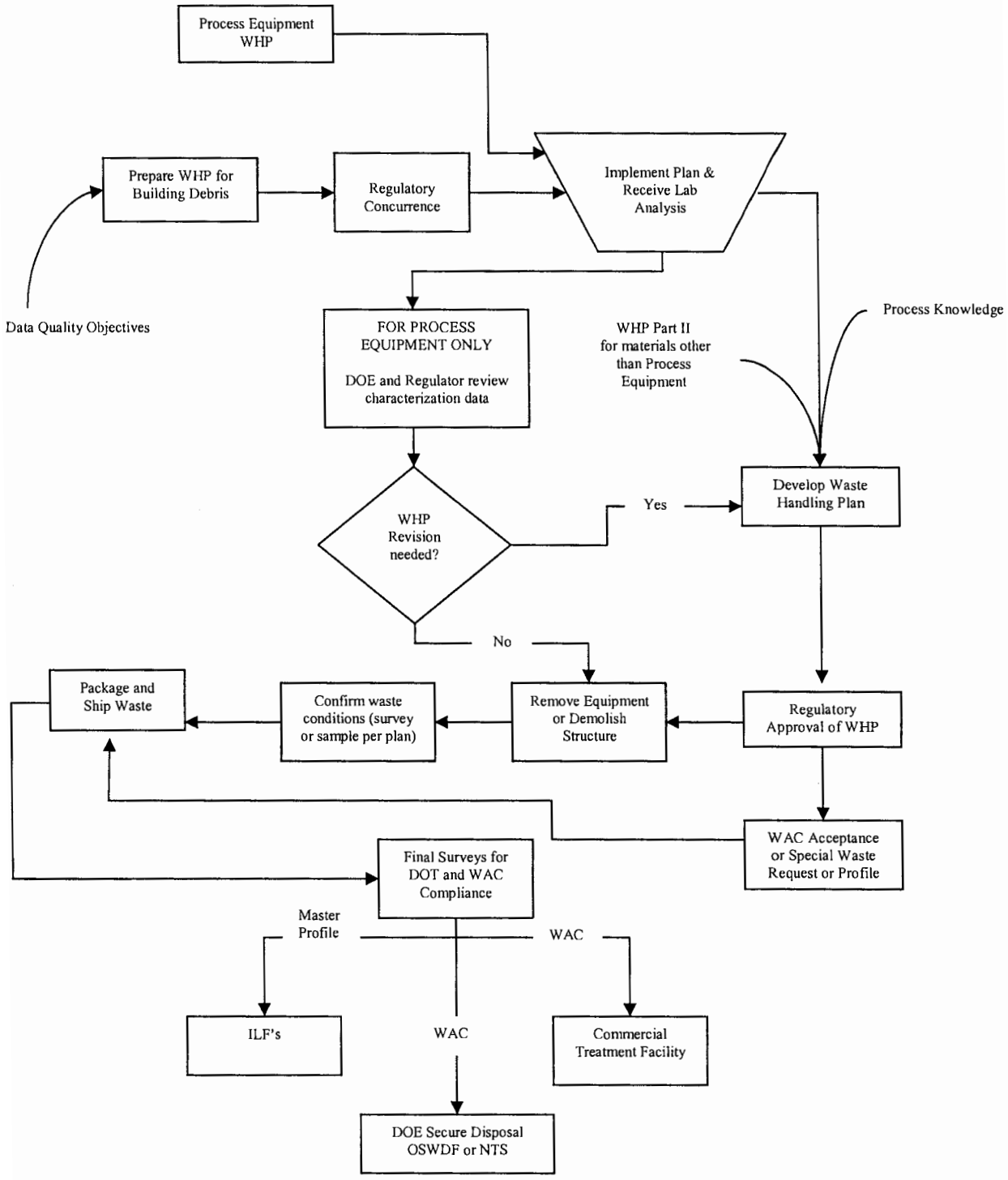

Fig. 1. Waste characterization, segregation, and disposal activities.

Waste will be segregated using a combination of process knowledge, radiological surveys, and characterization data. The waste segregation process will be described and approved by DOE and regulators in the WHP. Certain equipment and components, or piping, with either significant deposits of enriched uranium or high levels of ^{99}Tc may be segregated for decontamination or special handling.

Waste will then be packaged and shipped to the appropriate disposal facility. The project will utilize individuals qualified in waste management and transportation requirements for the waste disposition process. The anticipated waste types and disposition methods are shown in Table 1 and Table 2 of this plan; however, other waste disposition options may be explored if significant new knowledge, technology, or requirements emerge before the waste is generated.

2.4 WASTE APPROVAL PROCESS FOR OSWDF

The OSWDF WAC is documented in the overall Waste Management Plan which will be approved by DOE. This plan specifies the waste characterization requirements, WAC, and the request and approval process for waste proposed for disposal at the OSWDF. Wastes generated from the proposed D&D and planned for disposal at the OSWDF will be characterized and evaluated for disposal in accordance with the procedures specified in the WAC. Each waste stream will be submitted for approval to the WAC Board, which will include DOE and D&D contractor representatives. The PORTS D&D Project team will continue to work closely with the OSWDF WAC Board through the design phase of the D&D project to ensure that wastes generated can be accepted at the OSWDF or will be sent to other disposal facilities.

In general, the preliminary WAC process is depicted in Fig. 2. Initially, a waste stream comprising waste materials that will be generated by a project is divided into waste lots at the convenience of the D&D project in conjunction with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. Each waste lot is considered for approval and for disposal on its own merits and is approved for disposal by the WAC Board; this is based on information provided by the D&D project. Such considerations can include effects of various treatment technologies proposed for a waste lot. The first step in the process, labeled Dl in the flowchart, ensures that the correct information is presented to the WAC Board for approval of the specific waste lot. The second step (D2) ensures that sufficient characterization information is available for the waste lot to correctly describe its contaminants and concentrations. The third step (D3) evaluates the impact of individual waste lots on the volume-weighted sum-of-fractions (SOF) for the entire OSWDF. Once the WAC Board has accepted the waste, it will be shipped for disposal.

The PORTS Project team is working closely with the OSWDF project team to ensure that the wastes from the proposed D&D project planned for disposal at the OSWDF are in an acceptable form to meet the criteria in the WAC Plan.

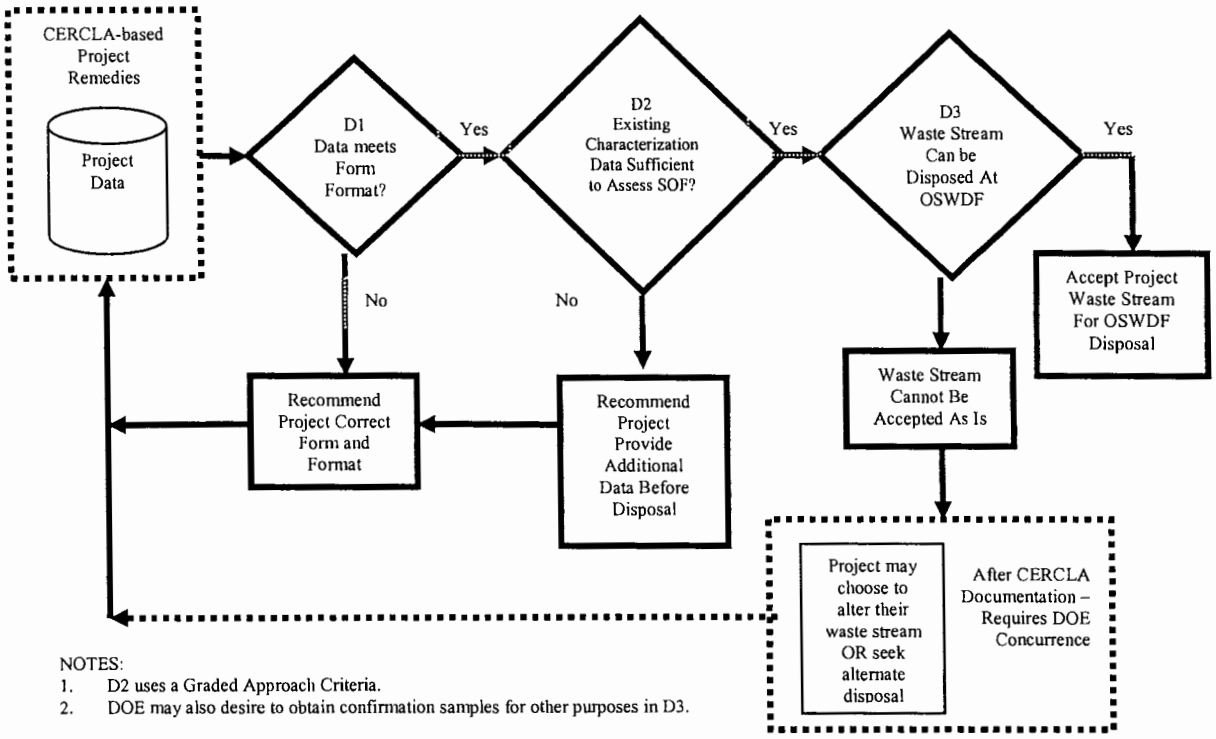

Fig. 2. Decision logic for OSWDF WAC Board data quality objectives

2.5 WASTE PACKAGING AND TRANSPORTATION

The project will transport wastes (after radiological and chemical characterization) to the OSWDF and other off-site waste disposal facilities as necessary. A D&D contractor approved transporter will transport waste. A significant quantity of the waste and materials removed from PORTS process buildings (process equipment) is considered radiologically contaminated, classified material. Radiologically contaminated, classified waste and materials from PORTS will be, as required: (1) packaged and locked with a security tampering indicator device and transported to a location inside the PORTS security fence for staging and eventual disposal at the OSWDF; or (2) packaged, locked, and transported directly to an approved off-site disposal facility for disposal. The transportation subcontractor will be required to adhere to the requirements established in DOE Orders that apply to shipping and transporting of classified materials, as well as, the D&D contractor special conditions for shipping and transporting notifications.

The U.S. Department of Transportation (DOT) defines hazardous materials as those materials (including hazardous substances, hazardous wastes, and marine pollutants) capable of posing an unreasonable risk to health, safety, and property when transported. DOE has committed to following applicable and current DOT regulations unless the material is deemed important to national security, wherein certain specific regulatory requirements are superseded.

2.5.1 Transportation of Fissile Materials

General requirements for packaging and shipping radioactive materials apply to radioactive materials, and additional packaging requirements and shipping controls apply to packages containing U^{235} (i.e., fissile material). The potential for these materials (if in the proper quantity and geometric configuration) to undergo spontaneous nuclear chain reaction (criticality) forces limits on the packaging. Under conditions where the amounts or concentrations of fissile material are so low, there are no

additional packaging requirements beyond those for other radioactive materials. As the quantity or concentration of fissile material increases per package, strict limits would be imposed to ensure that the potential for nuclear criticality is essentially zero. Also, controls are placed on the number and amount of fissile material aboard a single transportation conveyance. The number of packages of fissile Class 7 (radioactive) material in any non-exclusive-use transport vehicle must be limited so that the sum of the criticality safety indices (CSIs) does not exceed 50. Except for consignments under exclusive use, the CSI of any package, or over-pack, may not exceed 50. A fissile material package with a CSI greater than 50 must be transported by exclusive use. For shipments of fissile material packages being transported under exclusive-use conditions, the sum of CSIs may not exceed 100. In addition, for shipments transported under exclusive-use conditions, the radiation dose rate may not exceed 0.02 mSv per hour (2 mrem per hour) in any position normally occupied in the motor vehicle. For shipments transported as exclusive use under the provisions of the Code of Federal Regulations (CFR) 49 CFR 173.441(b), for packages with external radiation levels in excess of 2 mSv (200 mrem per hour) at the package surface, the motor vehicle must meet the requirements of a closed transport vehicle (see 49 CFR 173.403).

2.5.2 DOT Fissile Material Exceptions

Although the applicable packaging limitations and requirements for radioactive materials may apply, packages containing any fissile material, as defined previously here, may be excepted from the additional fissile material packaging and transportation requirements (49 CFR 173.453). The exceptions that may be applicable to the project waste streams are as follows:

- An individual package containing 2g or less of fissile material;
- An individual package, or bulk packaging, containing 15g or less of fissile material, provided the package has at least 200g of solid non-fissile material for every gram of fissile material;
- Low concentrations of solid fissile material commingled with solid non-fissile material, provided that:
  - There are at least 2000g of non-fissile material for every gram of fissile material, and
  - There are no more than 180g of fissile material distributed within 360kg of contiguous non-fissile material.
- Liquid solutions of uranyl nitrate enriched in U^{235} to a maximum of 2% by mass, with a total plutonium and U^{233} content not exceeding 0.002% of the mass of uranium, and with a minimum nitrogen-to-uranium atomic ratio of 2. The material must be contained in at least a DOT Type A package.

No fissile material requirements exist for natural or depleted uranium. Also, in any case where a shipper uses an exception to the regulations, the shipper must be able to demonstrate by either analytical data or process knowledge that the limit is not exceeded.

2.5.2.1 Specific DOT fissile material packaging limitations

The amount of fissile material that can be placed into a single package is limited based on the concentration [weight percent (wt %)] of fissile material and the total amount of fissile material. Notwithstanding, the amounts of fissile materials allowed per package described in 49 CFR 173.415 must comply with the requirements specified in 10 CFR Part 71, Subpart C, Table 71-2.

The specific DOT packaging requirements are contained in 49 CFR 173.417. Except as provided in 49 CFR 173.453, fissile materials containing not more than Al or A2, as appropriate, must be packaged in one of the following packages:

- any packaging listed in 49 CFR 173.415, limited to the Class 7 (radioactive) materials specified in 10 CFR Part 71, Subpart C; and
- any Type AF, Type B(U)F, or Type B(M)F packaging that meets the applicable standards for fissile material packages in 10 CFR Part 71.

Fissile Class 7 (radioactive) materials with radioactive content exceeding A1 or A2 must be packaged in one of the following packages: Type B(U) or Type B(M) packaging that meets the standards for packaging of fissile materials in 10 CFR Part 71, and is approved by the Nuclear Regulatory Commission (NRC) and used in accordance with 49 CFR 173.471.

Notwithstanding, continued use of the existing fissile material packages constructed to DOT Specifications 6L, 6M, or 1A2, is authorized until October 1, 2008. Continued use is based on each package conforming in all respects to the requirements of 49 CFR 173.417 that were in effect on October 1, 2003. Recall, as stated here, the contents of each package must be controlled so that the CSI for each fissile material package is limited to the requirements listed in Sect. 2.5.2 of this plan.

2.5.2.2 Other packaging options

Beyond these packaging options, the shipper may design and construct a package wherein the amount of fissile material can exceed the DOT limit, and that the size of the container or package can accommodate larger contents. These packages must be designed to meet the performance criteria of the NRC or the International Atomic Energy Agency, including the hypothetical accident conditions.

2.5.2.3 Exceptions from DOT, DOE, NRC, or fissile packaging requirements

For items or objects that cannot be packaged in existing certified or allowed packaging because of their fissile contents or physical size, and package certification is an unreasonable option; DOT may allow for an exemption from specific regulatory requirements (49 CFR 107.1 01). When applying for an exemption or to show NRC equivalency, the project must detail which requirement(s) will not be met, along with a detailed description of the proposed equivalency and a statement outlining the basis for the equivalency. The justification for packaging or transportation must demonstrate that a level of safety equivalent to that required by the NRC and DOE regulations will be achieved. To demonstrate safety consistent with the public interest, the application should incorporate relevant shipping and incident experience, along with a description of any compensatory measures to be taken to address the associated risks. In any event, the project intends to demonstrate equivalency to ship material over the road that cannot meet existing regulations.

3. REFERENCES

BJC (Bechtel Jacobs Company LLC) 2002. *Preliminary Assessment for a Potential On-Site Waste Disposal Facility at the Portsmouth Gaseous Diffusion Plant*, BJC/PORTS-331 & D0, Bechtel Jacobs Company LLC, Piketon, Ohio.

BJC 2003. *Waste Volume/Characteristics Inventory for the Evaluation of a Potential On-Site Waste Disposal Facility at the Portsmouth Gaseous Diffusion Plant*, BJC/PORTS-449, Bechtel Jacobs Company LLC, Piketon, Ohio.